Supplementary Materials for

An adaptive synchronous extraction (ASE) method for estimating intensity and footprint of surface urban heat islands: A case study of 254 North American cities

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Supplementary figures (Fig. S1 to S7)

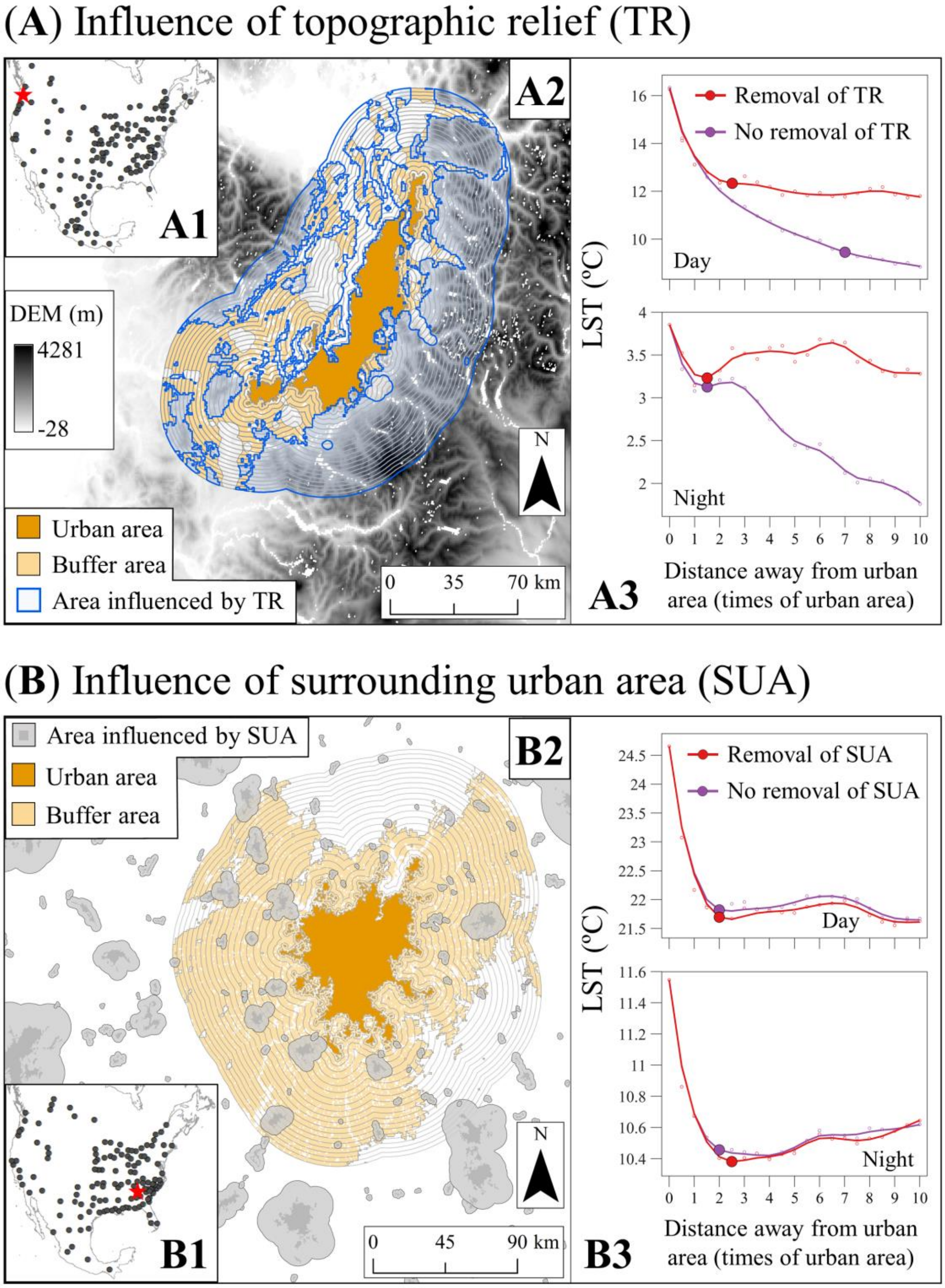

Fig. S1. Examples of the influence attributed to topographic relief (TR) and surrounding urban area (SUA). (A1) Locations of cities influenced by TR. (A2-A3) Influence of TR on the surrounding buffers, the urban-rural LST gradients and the turning points, using the city of Seattle as an example. (B1) Locations of cities influenced by SUA. (B2-B3) Influence of SUA on the surrounding buffers, the urban-rural LST gradients and the turning points, using the city of Atlanta as an example.

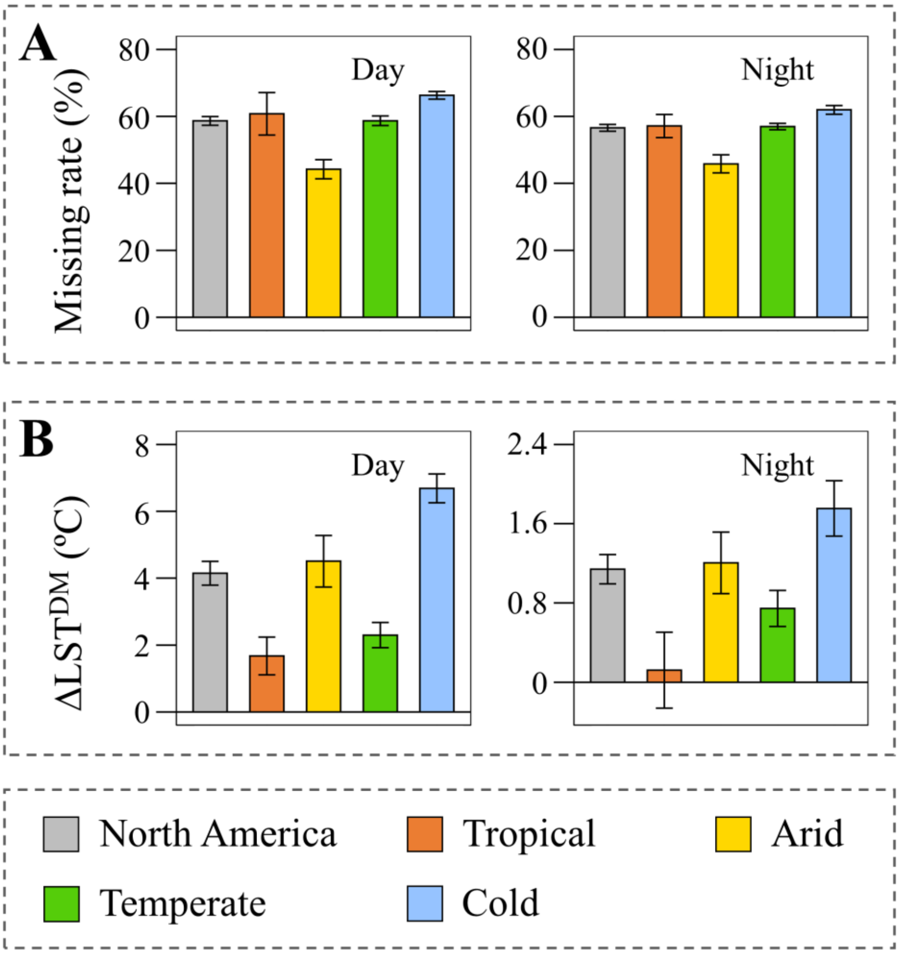

Fig. S2. LST data missing (DM) and its influence on the average LST. (A) The average missing rate of original MODIS LST data. (B) The average LST difference (ΔLST^{DM}) between the original MODIS LST data (disturbed by DM) and the gap-filled MODIS LST data. The histograms and bars represent the mean values and 95% confidence intervals, respectively.

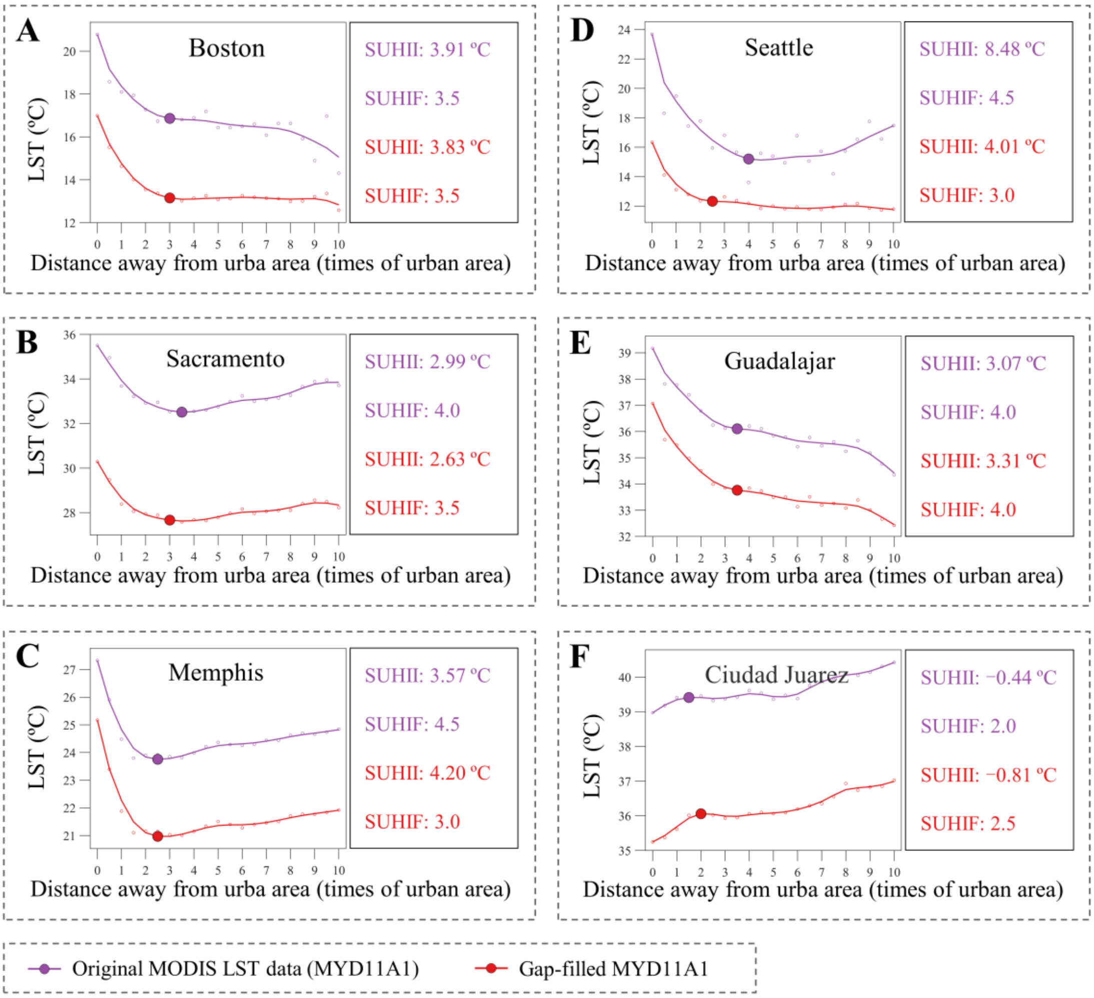

Fig. S3. Influence of LST data missing (DM) on the SUHI intensity (SUHII) and footprint (SUHIF) estimated by the ASE method, an example of 6 typical cities.

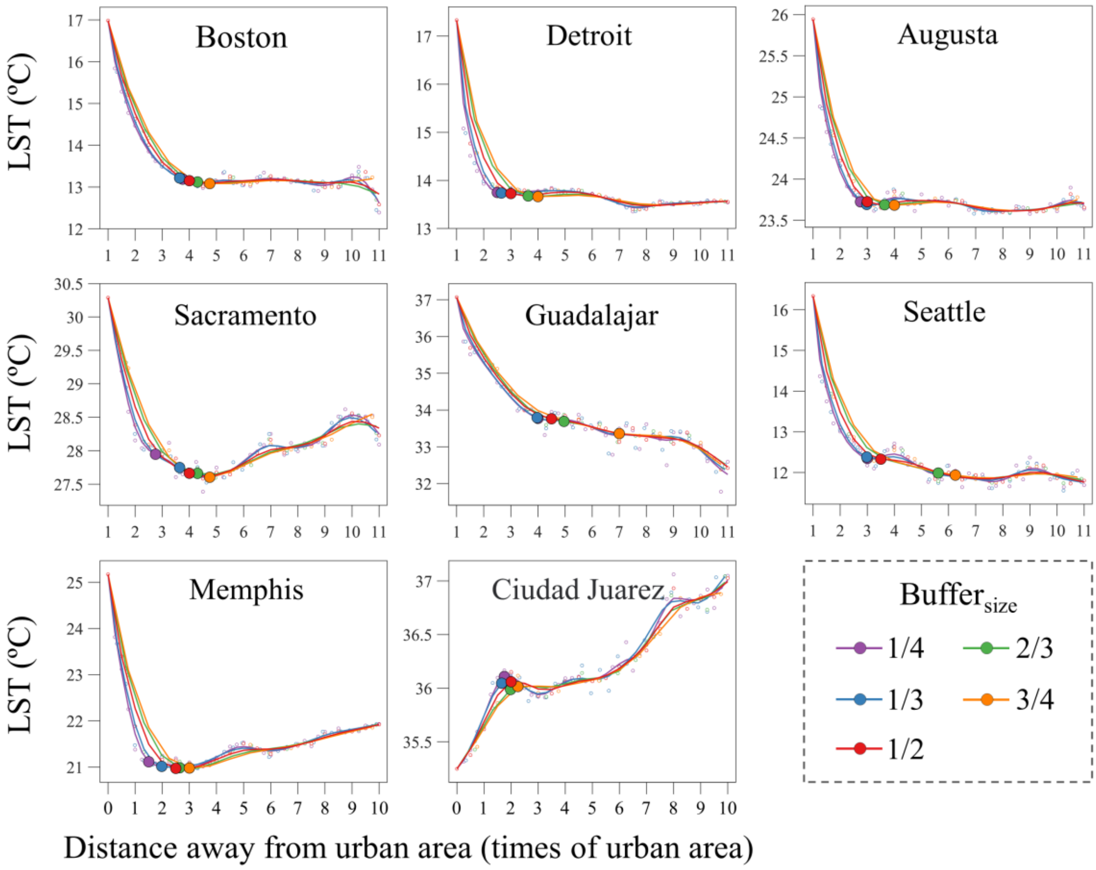

Fig. S4. Sensitivity analysis for the parameter of Buffer_{size} in the ASE method, an example of 8 typical cities. Buffer_{size} is the ratio of the size of each buffer to the size of the central urban area.

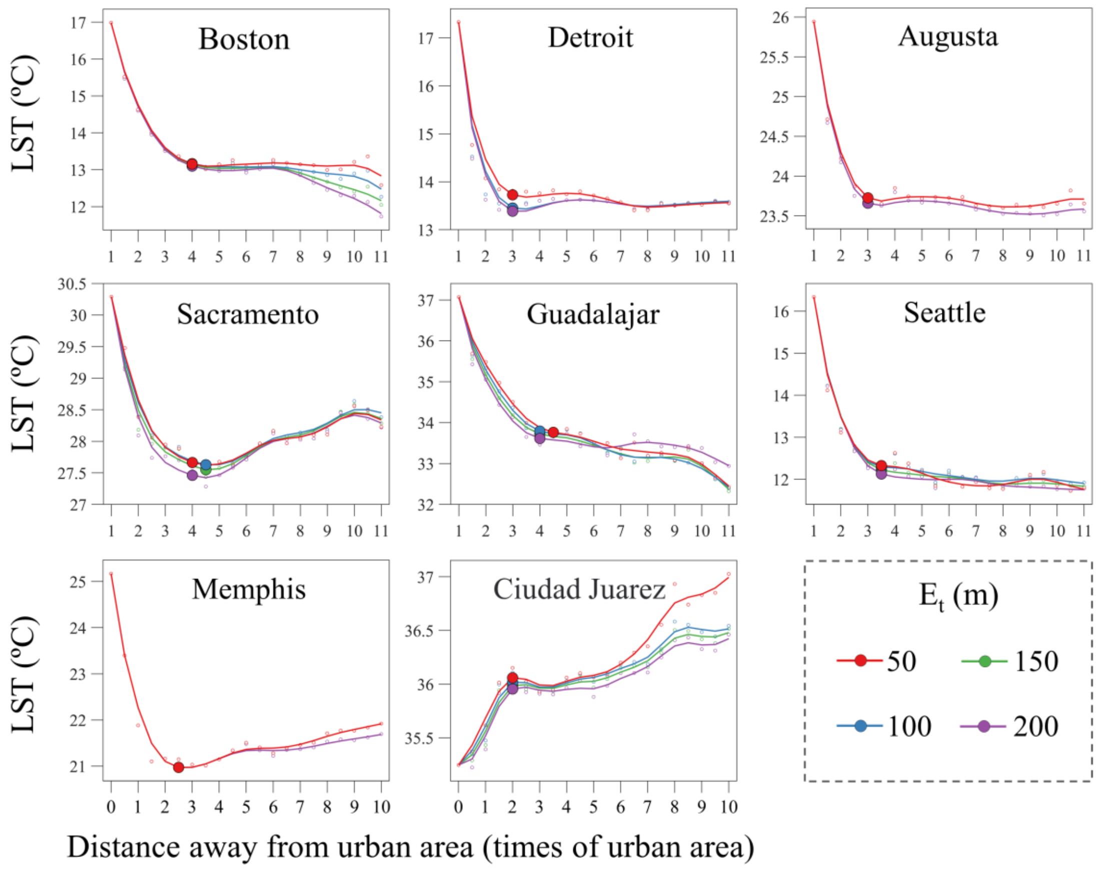

Fig. S5. Sensitivity analysis for the parameter of E_t in the ASE method, an example of 8 typical cities. E_t is the elevation threshold for removing the influence of topographic relief.

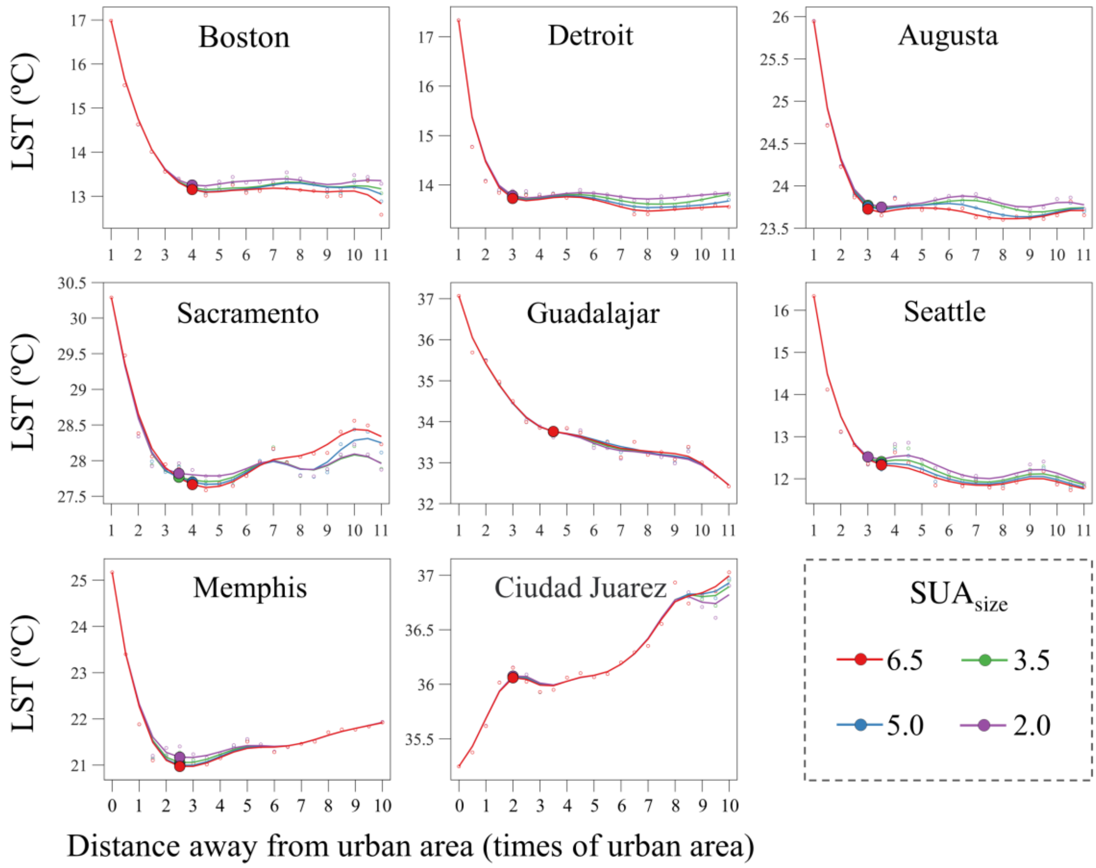

Fig. S6. Sensitivity analysis for the parameter of SUA_{size} in the ASE method, an example of 8 typical cities. SUA_{size} is the multiple by which the size of the surrounding urban area is expanded.

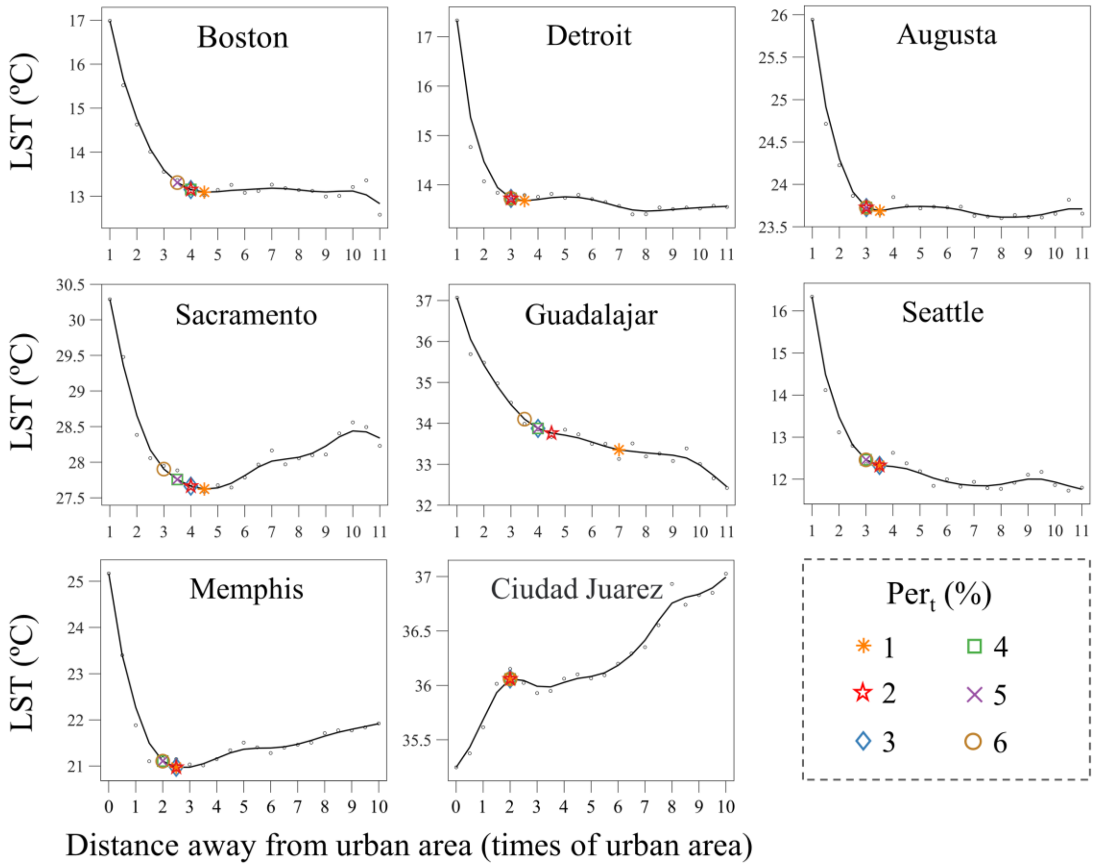

Fig. S7. Sensitivity analysis for the parameter of Per$_t$ in the ASE method, an example of 8 typical cities. Per$_t$ is a scaling factor determining the threshold for the extraction of turning points.